

Section 6.3 Practice Master

1. Factor to find the x -intercepts.

a) $y = x^2 + 5x + 6$

b) $y = 4x^2 + 12x + 9$

c) $y = x^2 - 8x$

d) $y = x^2 - 4x - 12$

e) $y = 6x^2 - 17x - 14$

f) $y = 12x^2 - 20x$

2. Find the x -intercepts and the vertex for each quadratic relation. Sketch a graph for each relation.

a) $y = x^2 - 16$

b) $y = -x^2 - 6x + 7$

c) $y = 3x^2 + 12x - 15$

d) $y = 25 - x^2$

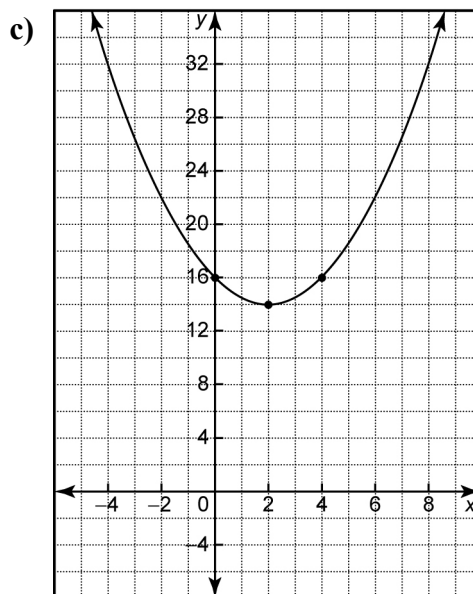
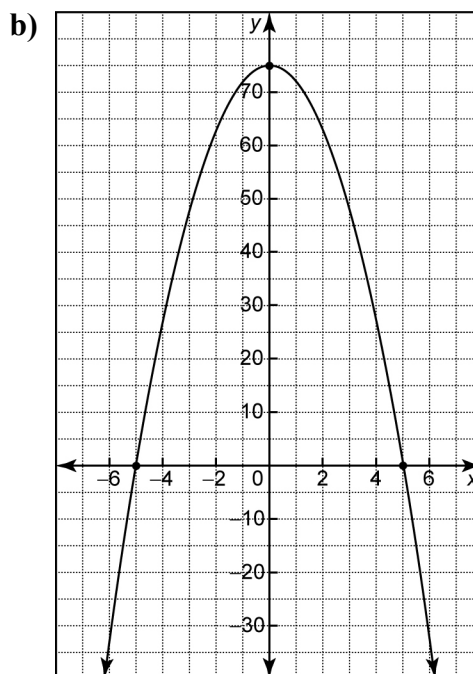
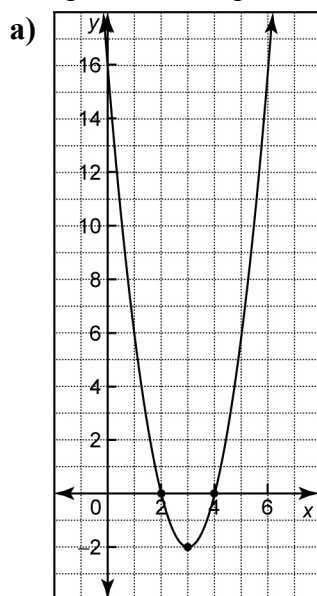
3. Find the zeros and the vertex of each quadratic relation, and then sketch its graph. Check your results using a graphing calculator.

a) $y = 4x^2 - 16x - 9$

b) $y = 5x^2 - 32x + 12$

c) $y = -4x^2 - 35x - 24$

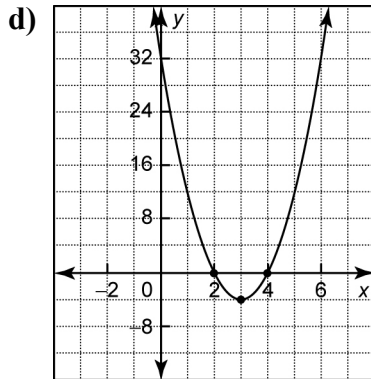
4. Write an equation in the form $y = ax^2 + bx + c$ to represent each parabola.



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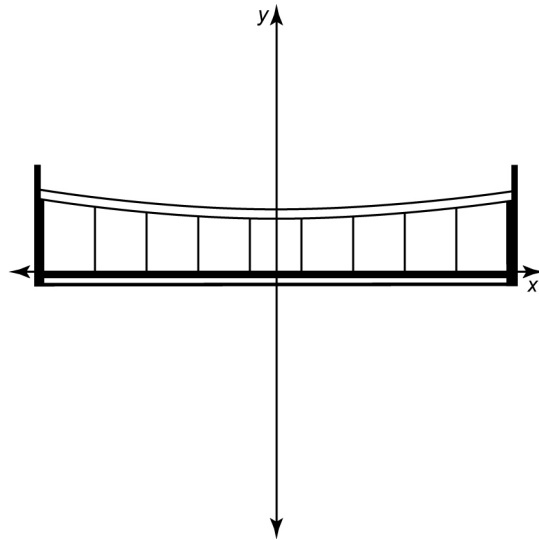
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5. A parabola has a vertex of (1, 8) and one x -intercept is 3.
 - a) Find the equation of the parabola in the form $y = a(x - h)^2 + k$.
 - b) Find the other x -intercept.
 - c) Find the y -intercept.
6. The path of a soccer ball can be defined by the relation $h = -0.025d^2 + d$, where h represents the height, in metres, and d represents the horizontal distance, in metres, that the ball travels before it hits the ground.
 - a) Find the d -intercepts.
 - b) Sketch a graph of the relation.
 - c) For what values of d is the relation invalid? Explain.
 - d) What is the maximum height?
 - e) How far will the ball have travelled horizontally at its maximum height?

7. A roadway on a bridge is supported by two towers with cables that join them as pictured below.



The cables hang in a parabolic shape that can be represented by the equation $y = 0.00036x^2 + 4$.

- a) Use a graphing calculator to graph the relation.
- b) Identify the minimum or maximum value and the coordinates of the vertex.
- c) Write an equation for the axis of symmetry.
- d) Identify the y -intercept and the x -intercepts.